REMARKS/ARGUMENTS

Pursuant to the Examiner's suggestion in the outstanding Office action, claim 18 has been amended to correct the dependency informality. Claims 1, 19, 20 and 21 have been amended by changing "track" to -- swath -- in order to overcome the Section 35 U.S.C. § 112(2) rejection. In claim 11, "line" has been changed to -- swath -- in order to overcome the same rejection. Claims 3 and 17 have been amended to correct minor typographical errors.

Pursuant to the discussion at the interview conducted on February 20. 2008, claim 1 has been amended to more particularly point and distinctly claim what applicants regard as their invention. More particularly, claim 1 has been amended to incorporate the features of claim 9, which includes the additional steps of: 1) generating radius of curvature data based on best fit algorithms from GPS data: and 2) the aim point being at least one of an interpolated point, a previously traveled swath edge and a data file of track points. Claim 1 has also been amended pursuant to the Examiner's suggestion at the interview to indicate that the aim point can be one of a series of points defining a previously-traveled swath edge.

Claim 1, as amended, clearly distinguishes over the Sampo et al. U.S. 5,923,270 reference. At the interview, such distinctions were pointed out and are summarized in the claim comparison chart attached hereto. Generally, Sampo et al. disclose an automatic steering utilizing dead reckoning (based on current speed and direction and optionally supplemented with a gyroscope) for supplementing remote positioning (e.g., GPS). In fact, Sampo teaches away from the claimed invention wherein a compensated heading is computed based on integrating (blending) a yaw rate with a GPS heading. which compensated heading is dynamically calibrated with GPS.

The path curvature generated by the Sampo et al. system is a preset value, which the automatic steering system follows. This teaches away from the claimed correction-curve radius (Rcurve) whereby the claimed invention performs course corrections based on specific criteria including best-fit algorithms, etc. examples of the generation and use of these radii of curvature are shown in Figs. 3-7 and described in the corresponding portions of the detailed description at [0092-143]. Such correction curves are instantaneously generated in response to the various error conditions encountered in the field. as opposed to the preset path curvatures of Sampo et al.

Significant advantages are achieved by the invention as claimed, particularly in connection with simultaneously, on-the-fly correction curve generation combined with the relatively high accuracy of the gyroscope system being dynamically calibrated with GPS for generating such Rcurves. In particular, relatively smooth corrections can be optimized using the claimed correction methodology without the vehicle overshooting or oscillating. which were significant problems with previous systems.

The other independent claims 19, 20 and 21 have also been amended consistent with the amendments to claim 1.

Also pursuant to the discussion at the interview, new claim 22, depending from claim 1, has been added to include the additional step of generating radius of curvature data based on specific best fit algorithms adapted to correct four possible error conditions relating an initial vehicle heading in relation to the desired swath and the aim point, i.e.: 1) away from the desired swath; 2) toward the desired swath beyond the aim point; 3) toward the aim point ; and 4) and toward the desired swath before the aim point. Sampo et al. do not disclose or make obvious generating radius of curvature data as part of a radius of curvature calculating step using specific best fit algorithms corresponding to these four specific error conditions involving the initial vehicle heading in relation to the desired swath and the aim point.

Pursuant to the Examiner's suggestion at the interview. if claims 1 and 19-21 are allowed, additional dependent claims covering the same subject matter as new claim 22 will be added to depend from the other independent claims 19-21.

Based on the foregoing, the application is believed to be in condition for allowance and notice to this effect is earnestly solicited. The Examiner is invited to contact the undersigned by telephone if prosecution of this application can be expedited thereby.

The Commissioner is authorized to charge any fees and credit any excess payments to Deposit Account No. 50-3424.

Substance of the February 20, 2008 Interview

1. No exhibits were shown or demonstrations conducted.

2. Claims 1 and 19-22 were discussed.

3. The art of record was discussed.

4. The principle proposed amendments of a substantive nature related combining Claims 1 and 9, with additional amendments being suggested by the Examiner.

5. The general thrust of the principal arguments was that the primary reference, Sampo et al. U.S. 5,923,270, not only lacks many of the claimed features, but actually teaches away from the claimed invention.

6. No other pertinent matters were discussed.

7. The general results or outcome of the interview was that claim 1, as amended, and claims 19-21 with similar amendments, distinguish over the primary reference. New claim 22, which depends from claim 1, is added to provide additional substeps in the Rcurve calculating step, which additional substeps apply best fit algorithms adapted to correct four specific course-correction conditions.

Respectfully Submitted,

3/10/08
Date

Mark Brown
MARK E. BROWN
Patent Office Reg. No. 30,361

LAW OFFICE OF MARK BROWN, LLC
4700 Belleview Suite 210
Kansas City. MO 64112
Telephone: (816) 268-8950

Attorney for Applicant

Claim Comparison Chart

Claims 1 and 9 combined and amended	**Sampo 5,923,270**	**Comments**
Method of steering agriculture vehicle	+ (1:35-37)	
GPS data: pos, velocity and course	+ (3:60 – 4:5)	
Yaw rate	+ (3:32-40)	
Compute compensated heading based on: Integrate yaw rate, i.e. blend yaw rate with GPS heading	NA (3:48-60) Gyro used as auxiliary in maintaining dead-reckoning ("vector") heading, with track-derived distance/speed	Sampo dead reckoning (track-derived distance/speed) distinguishable from claimed invention blending yaw rate with GPS-derived heading without using distance/speed -- -- different functions in different orders.
Dynamically calibrate compensated heading with GPS	NA (3:48-60) Gyro heading error compensated by remote positioning (GPS), but GPS measuring delays compensated by dead reckoning. (5:27-31) Note traveling velocity (v) measured from vehicle wheels, track rollers 2 or from groundspeed radar, i.e. dead reckoning technique. (4:26-27)	Sampo dead reckoning supplemented with gyro vs. claimed invention dynamically calibrating gyro-derived heading with GPS -- -- different functions in different orders. Sampo dead reckoning teaches away from the claimed invention, which blends yaw rate with GPS-derived heading without using distance/speed (dead reckoning). Sampo usage of GPS requires delay-compensation by dead reckoning techniques.
For each swath (including multiple desired positions & headings): Compute actual track and crosstrack error from desired swath based on: compensated heading and position, compare to	 + (5:58-67; 6:35-45)	

desired position and compare compensated heading to selected desired heading; Calculate desired Rcurve to arrive at desired ~~track~~ swath with desired heading		Correcting Sec. 112(2) antecedent basis.
Generating curve radius data based on best-fit algorithms from GPS data including current position, heading and speed to desired aim point and desired heading; aim point: straight line with parallel guidance, interpolated point from a point of closest approach to previously logged, stored or generated curved track; edge of previously traveled swath; data file of track points based on best-fit algorithms.	NA (7:1-35) Path curvature is a setup value for preprogramming path 15. Sampo distinguishes traditional unit controllers and teaches away from "space adjuster" for returning vehicle to path at optimally high-speed. Sampo discloses "navigation point," but this is actually a low point on the vehicle, i.e. below the GPS antenna. (5:1-10)	Claim 9 limitations not disclosed in Sampo include: aim point; best-fit algorithms; interpolation of aim point; data file of track points based on best-fit algorithms; etc. See Figs. 2A and 2B for possible heading error conditions (1-4) addressed by the Rcurve generating feature as claimed, and related discussion at [0084-91]. Claimed "aim point" distinguishable because imaginary, dynamic *intercept point on path* vs. *vehicle-based navigation point* of Sampo. [0084-85]
Compute steering command based on desired Rcurve Command to steering mechanism	NA (7:1-36) Open navigation and feedback control used for calculating errors from preprogrammed path to determine "sensible guidance" as an alternative to conventional space adjuster (i.e. crosstrack error) correction techniques. (6: 61-7: 22) Sampo uses "relay-like" braking action of inside track for driving "straight on" to	See discussion above for differentiating claimed Rcurve from Sampo path curvature setup value. Sampo control system (3 input variables control 2 output variables) "differs substantially" (7:6-7) from controller of claimed invention calculating desired Rcurve for computing steering command. Substantial difference because Sampo crawler-tracked vehicle provides path curvature from speed differences of track rollers. Sampo uses "relay-like" navigation mode

Steering mechanism directs vehicle	the preprogrammed path. (7:26-31) "Origo" means a point defined on the vehicle for following a given path, much like the Sampo "navigation point" discussed above. (7:31-36) Differential track roller speed steering. (7:26-28)	with quick track braking actions. All teaching away from claimed invention. Claimed invention calculates Rcurve for *correction* based on crosstrack and heading errors. Sampo path curvature is a *setup* value defining the preprogrammed, given path.